



Tidal variations in length of day and UT1 observed with GPS and VLBI – Impact of different processing strategies

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The deformations of the Earth caused by the zonal part of the tidal potential induce fluctuations in Universal Time UT1 and its time derivative, the length of day (LOD). These variations show periods from ~ 5 days to 18.6 years. For the investigation of the tidal effects the parameters dUT1 (UT1-UTC) and LOD were computed from VLBI and GPS observational data with a time resolution of 6 hours: dUT1 was estimated from all geodetic VLBI sessions performed in the years 2000-2006, using the VLBI software package OCCAM61E. LOD series were derived with the Bernese GPS Software 5.0 for the year 2005, analysing data of a global GPS network composed of 113 stations of the IGS05 reference frame. Due to the different time spans covered by the VLBI- and GPS-based parameter series, a combined series was not generated. Therefore the most significant amplitudes of dUT1- and LOD-variations were determined independently, based on Fourier and heuristic analysis, from the individual series up to the period of 31.8 days. In both cases various processing approaches, e.g. using different reference frames or atmospheric models, have been applied in order to study the impact of the processing strategy on the derivation of the amplitudes. The results were compared with the values of the model recommended in the IERS Conventions 2003 by Defraigne and Smits (1999).